

September 3, 2021

Ms. Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Drinking Water Protection Services, WTR-3-2
75 Hawthorne Street
San Francisco, California 94105

**Re: Proposed Annular Conductivity Device Contingency Actions Submitted in Support of
Application for Underground Injection Control Permit, Florence Copper Project,
Florence, Arizona**

Dear Ms. Rumrill:

Florence Copper Inc. (Florence Copper) herewith transmits revised contingency actions proposed in response to an inconclusive outcome of the proposed annular conductivity device (ACD) demonstration to be conducted during commercial In-Situ Copper Recovery (ISCR) operations. These contingency actions are submitted in support of our application for an Underground Injection Control (UIC) Permit submitted to the U.S. Environmental Protection Agency (USEPA) on October 4, 2019 (Application). These proposed contingency actions reflect our understanding of questions posed by the USEPA and regarding future monitoring in lieu of ACD monitoring if the planned demonstration is deemed inconclusive.

Proposed ACD Demonstration

The USEPA has indicated that a demonstration of the effectiveness of the ACDs will be required during commercial ISCR operations. The USEPA indicated that the demonstration should include physical contact of injected fluid with one or more installed ACDs to show the type of response that may be expected from vertical migration of injected fluid if such were to occur during ISCR operations.

Details of the proposed ACD demonstration were previously submitted to the USEPA on July 21, 2021. The proposed contingency actions described below replace the contingency actions included in the July 21, 2021 submittal. Other details regarding the planned ACD demonstration remain unchanged. Florence Copper is confident that the ACD demonstration will achieve the planned objectives, nevertheless, the revised contingency actions presented below are provided at the request of the USEPA.

Proposed ACD Demonstration Contingency Actions

If the demonstration does not show a statistically significant change from baseline values, Florence Copper will implement the following contingency actions:

1. Conduct trend analysis for each of the early warning ACDs to identify the greatest decrease in resistivity under baseline conditions. Use the trend analysis to identify naturally occurring extremes and data migration trends under baseline conditions. Compare the baseline data trends to trend(s) observed at the sacrificial ACD(s) installed in the injection zone to identify the magnitude of signal departure within the injection zone.
2. Install and begin monitoring ACD test contingency wells within the upper basin fill unit (UBFU) (the underground source of drinking water [USDW] overlying the ISCR wellfield). A total of 46 new monitoring wells will be installed throughout the wellfield area. The wells will be evenly spaced, with one well placed in each full resource block. Twenty-two of the wells will be screened in the UBFU, not more than 20 feet above the middle fine grain unit (MFGU), and 22 of the wells will be screened in the LBFU, not more than 20 feet below the MFGU. In the resource block where faults are projected to intersect the top of bedrock, the wells will be placed directly above locations where the faults are projected to intersect the top of bedrock. Combined with the planned ACD test wells, a total of 48 monitoring wells will be installed within the ISCR wellfield area.

The ACD contingency wells will be installed in the following sequence: one well will be installed in each resource block with active ISCR wells, and one in each of the pre-development resource blocks adjacent to the active ISCR wellfield. The ACD contingency well installations will be alternated between the UBFU and the lower basin fill unit (LBFU) in adjacent resource blocks. Additional ACD contingency wells will be installed outward in this pattern as the ISCR wellfield is expanded. Electronic specific conductance monitoring equipment will be installed in each of the ACD contingency wells to monitor changes in water chemistry that could indicate an excursion of injected fluid. A minimum of eight specific conductance measurements will be made at each ACD contingency well prior to the commencement of ISCR operations.

3. Incorporate the newly installed monitoring wells and ACD test wells (M72-UBF and M73-LBF) into the established monitoring program for the fault and USDW monitoring wells.

The proposed ACD contingency wells will be added to the planned 16 supplemental wells which include USDW monitoring wells, fault monitoring wells, and ACD test wells and to the 29 point of compliance (POC) wells located at the edge of the ISCR wellfield. The proposed ACD are shown on the accompanying map (Figure 1).

The number of proposed ACD contingency wells is appropriate to detect and characterize the nature and extent of fluid excursions into the USDW, based on standards published in *Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities March 2009, EPA 530/R-09-007*. This guidance document establishes the sample population size necessary to achieve goodness-of-fit criteria necessary to establish characteristics of sample population distribution. This guidance is routinely applied to characterize hazardous waste sites under the Resource Conservation and Recovery Act (RCRA) using the combined number of wells and samples to support detailed statistical analyses.

Locating the contingency wells both within the active ISCR wellfield and in the adjacent undeveloped resource blocks will allow for statistical comparison of sample populations in both the leached and un-leached areas of the wellfield and provides for a pre-leaching baseline for comparison. The combined number of wells, and background specific-conductance measurements will facilitate statistical analyses sufficient to detect changes in baseline water quality conditions both within the LBFU and within the USDW resulting from injection activities, should any occur.

With the addition of the ACD contingency wells, the Florence Copper ISCR wellfield will feature a total of 91 monitoring wells at build-out, which are positioned to monitor the USDW above and at the edge of the ISCR wellfield.

Florence Copper believes this proposal to be responsive to the USEPA request for contingency actions in response to an inconclusive ACD demonstration. Florence Copper hereby requests that the USEPA incorporate these elements into the UIC Application.

Please contact me at 520-316-3710 if you require any additional information.

Sincerely,
Florence Copper Inc.

Transmitted by Mark Nicholls on behalf of Brent Berg

Brent Berg
General Manager

cc: Maribeth Greenslade, Arizona Department of Environmental Quality

